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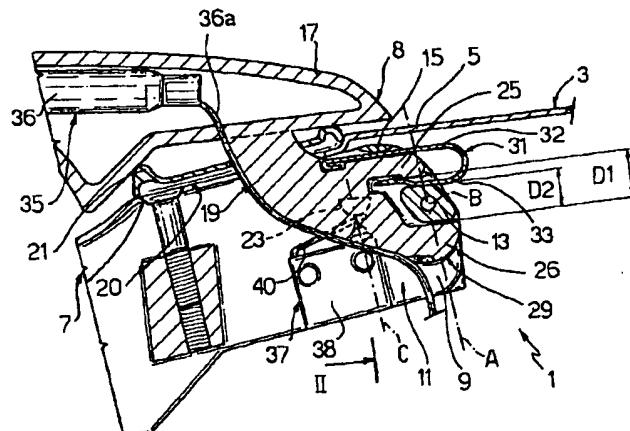
(54) Handle for controlling a vehicle door lock

(57) A handle (1) for controlling a lock of a vehicle door (3) has a connecting structure (7) fitted to the door (3); a control lever (8) operated in use by a user's hand; and a control device (37) having a switching member (40) movable in a switching direction (C) to set the lock to a safety-off mode; the lever (8) has a fork (19) hinging

the lever (8) to the structure (7) and connected in sliding manner inside a guide seat (11) on the structure (7) to enable the lever (8) to translate parallel to the switching direction (C) to directly activate the device (37).

Fig.1

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Description

[0001] The present invention relates to a handle for controlling a vehicle door lock.

[0002] More specifically, the present invention relates to a handle of the type comprising a connecting structure fitted to the vehicle door; a lever hinged to the connecting structure and gripped by the user; a user recognition device for reading an identification code carried by the user; and a pushbutton switch operated manually by the user to set the lock to safety-off mode.

[0003] In most applications, the pushbutton switch is fitted to the handle, and is operated from the outside directly by the user acting on a deformable seal protecting the switch, or is operated by means of a mechanical transmission interposed between the switch and the lever, so that the user activates the switch and releases the lock over a first and second portion of the rotation of the lever respectively.

[0004] Known handles of the above type are fairly unsatisfactory owing, in the case of the seal design, to the difficulty encountered by the user in immediately locating the exact point on the seal in which to activate the pushbutton switch. By way of a solution to the problem, contoured seals are used, but which are relatively complex and, in most cases, are subject to fairly rapid wear, thus impairing both the performance and appearance of the handle.

[0005] Mechanical transmissions, on the other hand, feature a fairly large number of expensive components, thus considerably increasing both the production and assembly cost of the handle.

[0006] It is an object of the present invention to provide a handle for controlling a vehicle door lock, designed to solve the above problems in a straightforward, low-cost manner, and which, in particular, is easy to use and comprises a relatively small number of component parts.

[0007] According to the present invention, there is provided a handle for controlling a lock of a vehicle door, the handle comprising a connecting structure which is fitted to said door; a movable control member gripped, in use, by a user's hand; connecting means for connecting said movable control member to said connecting structure; and control means activated manually from the outside to set said lock to a safety-off mode, and in turn comprising a switching member movable in a switching direction; characterized in that said control means are activated directly by said movable control member; and in that said connecting means comprise guide and slide means permitting translation of said movable control member in a direction substantially parallel to said switching direction.

[0008] A preferred, non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a section, with parts removed for

clarity, of a preferred embodiment of a handle for controlling a vehicle door lock in accordance with the present invention;

Figure 2 shows a section along line II-II in Figure 1.

[0009] Number 1 in Figure 1 indicates a handle (shown partly) for controlling a lock (not shown) of a vehicle door 3 having an outer body 5.

[0010] Handle 1 comprises a connecting structure 7 fitted, in known manner not described in detail, to an inner frame of door 3; and a movable control lever 8 connected to structure 7 and which, in use, is gripped by a user's hand to control the lock of door 3.

[0011] As shown in Figure 1, and particularly in Figure 2, structure 7 comprises two opposite end guide walls 9, both extending parallel to a direction A crosswise with respect to body 5, and defining a guide seat 11.

[0012] With reference to Figure 1, structure 7 also comprises a prismatic locating and hinge pin 13 extending between and integrally with walls 9, along an axis B perpendicular to walls 9 and to direction A, and transversely separated from body 5; and a stop portion 15 extending between walls 9, parallel to axis B and in an intermediate position between pin 13 and body 5.

[0013] Structure 7 has an opening 20, which is closed by an elastically deformable protective seal 21 forming part of handle 1 and interposed between structure 7 and lever 8.

[0014] Lever 8 comprises a hollow outer portion 17 gripped by the user; and a substantially platelike fork 19 extending from portion 17 and through opening 20 into structure 7, and surrounded by seal 21.

[0015] As shown in Figures 1 and 2, fork 19 carries two opposite lateral appendices 23, each projecting parallel to axis B and adjacent to a respective wall 9, and comprises two arms 25 and 26 extending crosswise to and on opposite sides of pin 13, and separated from each other by a distance D1 greater than the dimension D2 of pin 13 measured parallel to direction A, so that arms 25 and 26 engage seat 11 in sliding manner parallel to direction A.

[0016] Fork 19, pin 13 and walls 9 form part of an assembly 29 for connecting lever 8 to structure 7, and which comprises a guide and slide coupling defined by walls 9 and fork 19 to permit translation of lever 8 in a direction substantially parallel to direction A, and a hinged coupling defined by fork 19 and pin 13 to permit rotation of lever 8 about hinge axis B and with respect to structure 7.

[0017] Assembly 29 also comprises a U-shaped elastic plate member 31, which in turn comprises a first arm 32 interposed between stop portion 15 and arm 25 adjacent to portion 15, and a second arm 33 interposed between arm 25 and pin 13.

[0018] With reference to Figures 1 and 2, handle 1 also comprises a known detecting device 35 for detecting the presence of the user about to open door 3. More

specifically, device 35 comprises an aerial 36 (shown partly), which is housed inside hollow portion 17, is connected by a cable 36a to a known central control unit (not shown), and provides, in use, for reading an identification code carried by the user, and for transmitting an identification signal to the central control unit.

[0019] As shown in Figure 1 and particularly in Figure 2, handle 1 also comprises a control device 37 housed inside structure 7 and which is operated manually from the outside to switch the lock electrically to safety-on or safety-off mode, once the identification code is recognized, so as to disable or enable release of the lock. Device 37 comprises a pushbutton switch 38 connected, in known manner not described in detail, to structure 7 in a position adjacent to one of walls 9; and a switch lever 40 resting directly on one of appendixes 23 and movable in a switching direction C, substantially parallel to direction A and perpendicular to axis B, to activate the switch when lever 8 is operated.

[0020] In actual use, as the user approaches door 3, device 35 reads the user-carried identification code in known manner, and the central control unit enables control of the lock safety (not shown). The user pushes on lever 8; elastic member 31 exerts thrust in opposition to that activating switch lever 40; fork 19 slides inside guide seat 11 in a direction parallel to switching direction C, so as to directly switch device 37; and elastic member 31 provides for recalling lever 8.

[0021] Once the lock safety is released, the user opens the lock, in known manner not described in detail, by rotating lever 8 about axis B.

[0022] The advantages of handle 1 will be clear from the foregoing description.

[0023] In particular, handle 1 is obviously extremely easy to use, by device 37 being switched by simply pressing lever 8 against structure 7, i.e. with no seals on which to act manually to activate device 37. In particular, handle 1 has no contoured seals which might possibly impair the appearance of the handle.

[0024] Moreover, handle 1 is extremely straightforward, and hence cheap, to produce and assemble, by comprising a relatively small number of component parts and having no complex mechanical transmissions between lever 8 and control device 37. For the same reason, handle 1 is also extremely efficient and reliable.

[0025] The efficiency and reliability of handle 1 and, in particular, of device 37 are further enhanced by device 37 of handle 1 being fully protected against external agents by seal 21.

[0026] Clearly, changes may be made to handle 1 as described and illustrated herein without, however, departing from the scope of the present invention.

[0027] In particular, provision may be made for a user detecting and/or recognition device other than device 35 described by way of example; or aerial 36 may be dispensed with or located in a position other than as shown.

[0028] Moreover, as opposed to simply engaging

and releasing the lock safety, device 37 of handle 1 may also control full opening of the lock, especially when the lock, like control of the lock safety, is also opened electrically.

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Claims

1. A handle (1) for controlling a lock of a vehicle door (3), the handle comprising a connecting structure (7) which is fitted to said door (3); a movable control member (8) gripped, in use, by a user's hand; connecting means (29) for connecting said movable control member (8) to said connecting structure (7); and control means (37) activated manually from the outside to set said lock to a safety-off mode, and in turn comprising a switching member (40) movable in a switching direction (C); characterized in that said control means (37) are activated directly by said movable control member (8); and in that said connecting means (29) comprise guide and slide means (9, 19) permitting translation of said movable control member (8) in a direction substantially parallel to said switching direction (C).
2. A handle as claimed in Claim 1, characterized in that said guide and slide means (9, 19) comprise a guide (9) carried by said connecting structure (7); and a slide (19) defined by a portion (19) of said movable control member (8).
3. A handle as claimed in Claim 2, characterized in that said connecting means (29) comprise a locating member (13) integral with said connecting structure (8); and in that said slide (19) comprises a fork (19) in turn comprising two arms (25, 26) located on opposite sides of said locating member (13); said arms (25, 26) being separated by a distance (D1) greater than the dimension (D2) of said locating member (13) measured parallel to said switching direction (C).
4. A handle as claimed in any one of the foregoing Claims, characterized in that said connecting means (29) also comprise hinge means (19, 13) having a hinge axis (B).
5. A handle as claimed in Claims 3 and 4, characterized in that said hinge means (19, 13) comprise said fork (19) and said locating member (13) connected to each other to permit rotation of said movable control member (8) with respect to said connecting structure (7) and about said hinge axis (B).
6. A handle as claimed in Claim 4 or 5, characterized in that said switching direction (C) and said hinge axis (B) extend crosswise to each other.

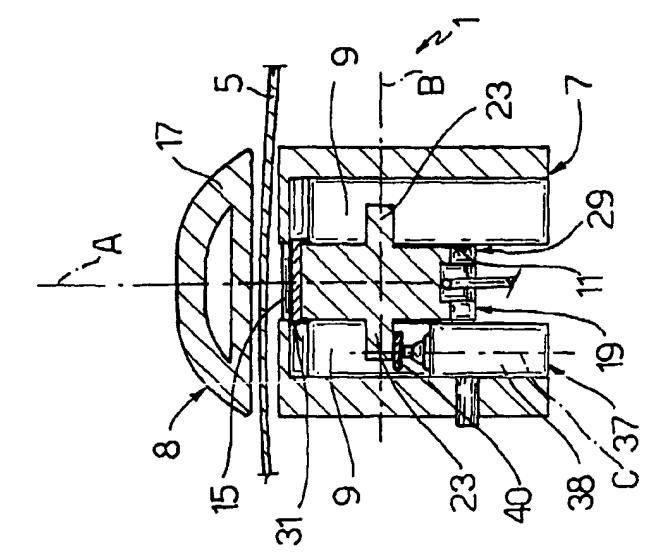
7. A handle as claimed in any one of Claims 2 to 8, characterized in that said switching member (40) rests directly on said slide (19).
8. A handle as claimed in any one of the foregoing Claims, characterized in that said connecting means (29) also comprise elastic return means (31) interposed between said connecting structure (7) and said movable control member (8) to exert thrust in opposition to that activating said switching member (40). 5
9. A handle as claimed in Claims 3 and 8, characterized in that said elastic return means (31) comprise an elastic member (31) at least partly interposed between said fork (19) and said locating member (13). 15
10. A handle as claimed in Claim 9, characterized in that said elastic member (31) is U-shaped and comprises a first arm (33) interposed between said fork (19) and said locating member (13), and a second arm (32) extending between said fork (19) and a stop portion (15) of said connecting structure (7). 20
11. A handle as claimed in any one of the foregoing Claims, characterized by comprising elastically deformable sealing means (21) interposed between said movable control member (8) and said connecting structure (7). 25 30
12. A handle as claimed in any one of the foregoing Claims, characterized in that said control means (37) comprise a pushbutton switch (38) connected to said connecting structure (7). 35

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Fig. 1

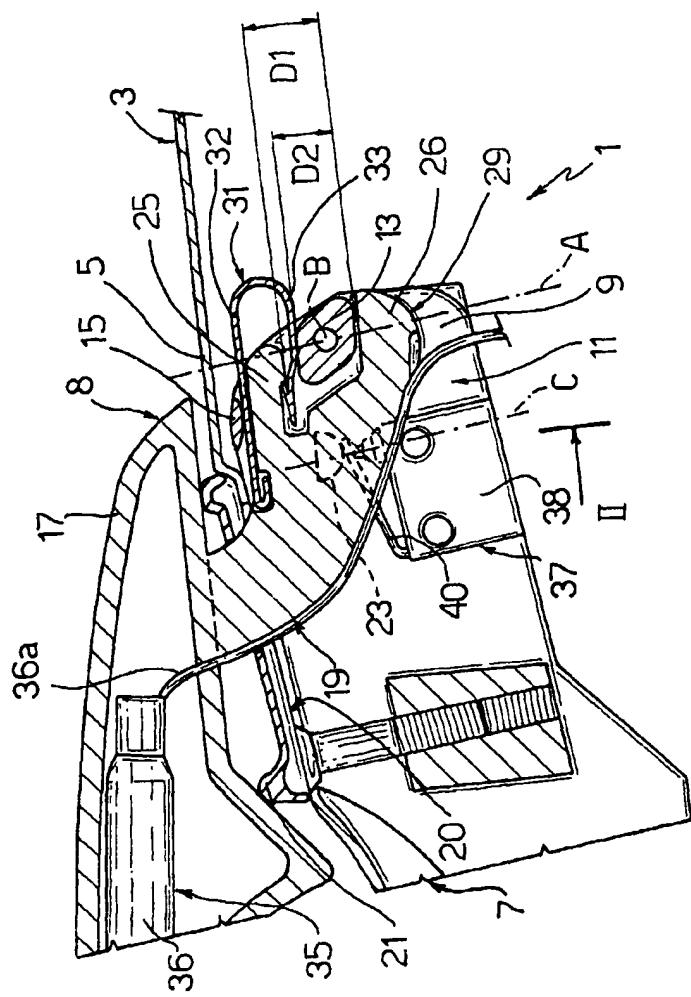


Fig. 2



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EUROPEAN SEARCH REPORT

Application Number
EP 00 10 3645

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
P,X	EP 0 916 789 A (ROBERT BOSCH GMBH) 19 May 1999 (1999-05-19) * the whole document *	1,8,12	E05B7/00
A	DE 197 28 967 A (BROSE FAHRZEUGTEILE GMBH & CO KG) 7 January 1999 (1999-01-07) * column 5, line 49 - column 6, line 9; figures 2D,2E * * column 6, line 55 - column 7, line 7; claim 1; figure 4 *	1,2,8,11	
A	DE 197 52 974 A (AISIN SEIKI K.K.) 17 September 1998 (1998-09-17) * column 2, line 33 - line 60; figure 2 * * column 3, line 68 - column 4, line 26 *	1,4,12	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E05B
<p>The present search report has been drawn up for all claims</p> <p>Place of search: THE HAGUE Date of completion of the search: 30 May 2000 Examiner: PEREZ MENDEZ, J</p> <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : Intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 10 3645

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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